


<p align="center"><b>CERTIFICATE OF EXPRESS MAILING</b></p> <p>NUMBER: <u>EL 831832181 US</u></p> <p>DATE OF DEPOSIT: <u>July 3, 2003</u></p> <p>I hereby certify that this paper or fee is being deposited with the United States Postal Service "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.</p> <p align="center">               _____              Signature         </p>	
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:	§	
<b>Leigh H. English</b>	§	Group Art Unit:
<b>Susan M. Brussock</b>	§	
<b>Thomas M. Malvar</b>	§	Examiner:
<b>James W. Bryson</b>	§	
<b>Caroline A. Kulesza</b>	§	Atty. Dkt. No.: <b>MECO:218--1</b>
<b>Frederick S. Walters</b>	§	<b>11792.0218.DVUS01</b>
<b>Stephen L. Slatin</b>	§	
<b>Michael A. Von Tersch</b>	§	
<b>Charles Romano</b>	§	
Serial No.:	§	
	§	
Filed: July 3, 2003	§	
	§	
For: COLEOPTERAN-RESISTANT	§	
TRANSGENIC PLANTS AND METHODS	§	
OF THEIR PRODUCTION	§	

**INFORMATION DISCLOSURE STATEMENT**

**MS: PATENT APPLICATION**  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, Virginia 22313-1450

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, Applicants respectfully request that this Information Disclosure Statement be entered and that the references listed on attached Form PTO-1449 be considered by the Examiner and made of record. Enclosed are copies of references B1-4 and C41.

The present application is a divisional application of U.S. Serial No. 09/427,770, filed October 27, 1999, which is a continuation of U.S. Serial No. 08/993,722, both of which are relied upon for an earlier filing date under 35 U.S.C. § 120. In accordance with Rule 37 C.F.R. § 1.98(d), copies of the listed documents, except for B1-4 and C 41, are not enclosed as they have been previously cited by or submitted to the U.S. Patent and Trademark Office in prior applications U. S. Serial No. 09/427,770 or U.S. Serial No. 08/993,722.

In accordance with 37 C.F.R. § 1.97(g), this Information Disclosure Statement is not to be construed as a representation that a search has been made or that no other possibly material information, as defined in 37 C.F.R. § 1.56, exists.

The present Information Disclosure Statement is being filed prior to the receipt of a first Office Action on the merits; and hence, is believed to be timely-filed in accordance with 37 C.F.R. § 1.97(b).

No fees are believed to be due in connection with the filing of this Information Disclosure Statement; however, if any fees should be due, the Commissioner is hereby authorized to deduct said fees from Deposit Account No. 01-2508/11792.0218.DVUS01.

Respectfully submitted,



Patricia A. Kammerer

Reg. No. 29,775

ATTORNEY FOR ASSIGNEE

MONSANTO TECHNOLOGY LLC

Date: July 3, 2003

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**Form PTO-1449** (modified)

List of Patents and Publications for Applicant's

**INFORMATION DISCLOSURE STATEMENT**

(Use several sheets if necessary)

Atty. Docket No.

MECO:218-1

Serial No.

## Applicants

Leigh H. English, Susan M. Brussock, Thomas M. Malvar, James W. Bryson, Caroline A. Kulesza, Frederick S. Walters, Stephen L. Slatin, Michael A. Von Tersch and Charles Romano

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Group:

U.S. Patent Documents

See Page 1

Foreign Patent Documents

Other Art

See Page 1-5

**U.S. Patent Documents**

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	A1	4,797,279	01/10/89	Karamata <i>et al.</i>	424	93	10/28/96
	A2	4,910,016	03/20/90	Gaertner <i>et al.</i>	424	93	08/03/87
	A3	5,024,837	06/18/91	Donovan <i>et al.</i>	424	93	05/06/87
	A4	5,071,654	12/10/91	English	424	405	11/13/89
	A5	5,187,091	02/16/93	Donovan <i>et al.</i>	435	240.4	03/20/90
	A6	5,500,365	03/19/96	Fischhoff <i>et al.</i>	435	240.4	10/09/92
	A7	5,567,862	10/22/96	Adang <i>et al.</i>	800	205	01/06/95
	A8	5,659,123	08/19/97	Van Rie <i>et al.</i>	800	205	08/26/94

**Foreign Patent Documents**

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
	B1	EP A 0 382 990 ✓	08/22/90				
	B2	WO 91 14778 A ✓	10/03/91				
	B3	WO 92 13954 A ✓	08/22/92				
	B4	WO 93 15206 A ✓	09/05/93				

**Other Art (Including Author, Title, Date Pertinent Pages, Etc.)**

Exam. Init.	Ref. Des.	Citation
	C1	Almond and Dean, "Suppression of protein structure destabilizing mutations in <i>Bacillus thuringiensis</i> $\delta$ -Endotoxins by second site mutations," <i>Biochemistry</i> , 32:1040-1046, 1993.

Examiner:

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EXAMINER: initial if reference considered, whether or not citation is in conformance with MPEP609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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	C2	Angsuthanasamnat <i>et al.</i> , "Effects on toxicity of eliminating a cleavage site in a predicted interhelical loop in <i>Bacillus thuringiensis</i> CryIVB $\delta$ -endotoxin," <i>FEMS Microbiol. Lett.</i> , 111:255-262, 1993.
	C3	Aronson <i>et al.</i> , "Mutagenesis of specificity and toxicity regions of a <i>Bacillus thuringiensis</i> protoxin gene." <i>J. Bacteriol.</i> , 177:4059-4065, 1995.
	C4	Baum, "TnpI recombinase: Identification of sites within Tn5401 required for TnpI binding and site-specific recombination," <i>J. Bacteriol.</i> , 177(14):4036-4042, 1995.
	C5	Caramori <i>et al.</i> , "In vivo generation of hybrids between two <i>Bacillus thuringiensis</i> insect-toxin-encoding genes," <i>Gene</i> , 98:37-44, 1991.
	C6	Carroll <i>et al.</i> , "Proteolytic processing of a coleopteran-specific $\delta$ -endotoxin produced by <i>Bacillus thuringiensis</i> var. <i>tenebrionis</i> ," <i>Biochem. J.</i> , 261:99-105, 1989.
	C7	Chen <i>et al.</i> , "Mutations in domain I of <i>Bacillus thuringiensis</i> $\delta$ -endotoxin CryIAb reduce the irreversible binding of toxin to <i>Manduca sexta</i> brush border membrane vesicles," <i>J. Biol. Chem.</i> , 270:6412-6419, 1995.
	C8	Chen <i>et al.</i> , "Site-directed mutations in a highly conserved region of <i>Bacillus thuringiensis</i> $\delta$ -endotoxin affect inhibition of short circuit current across <i>Bombyx mori</i> midguts," <i>Proc. Natl. Acad. Sci. USA</i> , 90:9041-9045, 1993.
	C9	Chowrira and Burke, "Extensive phosphorothioate substitution yields highly active and nuclease-resistant hairpin ribozymes," <i>Nucl. Acids Res.</i> , 20(11):2835-2840, 1992.
	C10	Cody <i>et al.</i> , "Purification and crystallization of insecticidal $\delta$ -endotoxin CryIIIB2 from <i>Bacillus thuringiensis</i> ," <i>Proteins: Struct. Funct. Genet.</i> , 14:324, 1992.
	C11	Cummings and Ellar, "Chemical modification of <i>Bacillus thuringiensis</i> activated $\delta$ -endotoxin and its effect on toxicity and binding to <i>Manduca sexta</i> midgut membranes," <i>Microbiol.</i> , 140:2737-2747, 1994.
	C12	Diehn <i>et al.</i> , "Problems that can limit the expression of foreign genes in plants: lessons to be learned from <i>B.t.</i> toxin genes," <i>Genet. Engineer.</i> , 18:83-99, 1996.

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See Page 1

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See Page 1-5

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Exam. Init.	Ref. Des.	Citation
	C13	Donovan <i>et al.</i> , "Isolation and characterization of EG2158, a new strain of <i>Bacillus thuringiensis</i> toxic to coleopteran larvae, and nucleotide sequence of the toxin gene," <i>Mol. Gen. Genet.</i> , 214:365-372, 1988.
	C14	English and Slatin, "Mode of action of delta-endotoxins from <i>Bacillus thuringiensis</i> : A comparison with other bacterial toxins," <i>Insect Biochem. Mol. Biol.</i> , 22(1):1-7, 1992.
	C15	English <i>et al.</i> , "Mode of action of CryIIA: a <i>Bacillus thuringiensis</i> Delta-endotoxin," <i>Insect Biochem. Molec. Biol.</i> , 24(10):1025-1035, 1994.
	C16	Gazit and Shai, "Structural and functional characterization of the $\alpha$ -5 segment of <i>Bacillus thuringiensis</i> $\delta$ -endotoxin," <i>Biochemistry</i> , 32:3429-3436, 1993.
	C17	Gazit and Shai, "The assembly and organization of the $\alpha$ 5 and $\alpha$ 7 helices from the pore-forming domain of <i>Bacillus thuringiensis</i> $\delta$ -endotoxin," <i>J. Biol. Chem.</i> , 270:2571-2578, 1995.
	C18	Ge <i>et al.</i> , "Functional domains of <i>Bacillus thuringiensis</i> insecticidal crystal proteins: refinement of <i>Heliothis virescens</i> and <i>Trichoplusia ni</i> specificity domains on CryIA(c)," <i>J. Biol. Chem.</i> , 266:17954-17958, 1991.
	C19	Grochulski <i>et al.</i> , " <i>Bacillus thuringiensis</i> CryIA(a) insecticidal toxin: crystal structure and channel formation," <i>J. Mol. Biol.</i> , 254:447-464, 1995.
	C20	Höfte <i>et al.</i> , "Structural and functional analysis of a cloned delta endotoxin of <i>Bacillus thuringiensis berliner</i> 1715," <i>Eur. J. Biochem.</i> , 161:273-280, 1986.
	C21	Johnson <i>et al.</i> , "Insecticidal activity of EG4961, a novel strain of <i>Bacillus thuringiensis</i> toxic to larvae and adults of Southern Corn Rootworm (Coleoptera: Chrysomelidae) and Colorado Potato Beetle (Coleoptera: Chrysomelidae)," <i>J. Econ. Entomol.</i> , 86(2):330-333, 1993.
	C22	Kwak <i>et al.</i> , "Exploration of receptor binding of <i>Bacillus thuringiensis</i> toxins," <i>Mem. Inst. Oswaldo</i> , 90:75-79, 1995.
	C23	Lambert <i>et al.</i> , "A <i>Bacillus thuringiensis</i> insecticidal crystal protein with a high activity against members of the family Noctuidae," <i>Appl. Environ. Microbiol.</i> , 62:80-86, 1996.
	C24	Lee <i>et al.</i> , "Domain III exchanges of <i>Bacillus thuringiensis</i> CryIA toxins affect binding to different gypsy moth midgut receptors," <i>Biochem. Biophys. Res. Commun.</i> , 216:306-312, 1995.

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See Page 1

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Exam. Init.	Ref. Des.	Citation
	C25	Lee <i>et al.</i> , "Location of a <i>Bombyx mori</i> receptor binding region on a <i>Bacillus thuringiensis</i> $\delta$ -endotoxin," <i>J. Biol. Chem.</i> , 267:3115-3121, 1992.
	C26	Lu <i>et al.</i> , "Identification of amino acid residues of <i>Bacillus thuringiensis</i> $\delta$ -endotoxin CryIAa associated with membrane binding and toxicity to <i>Bombyx mori</i> ," <i>J. Bacteriol.</i> , 176:5554-5559, 1994.
	C27	Rajamohan <i>et al.</i> , "Role of domain II, loop 2 residues of <i>Bacillus thuringiensis</i> CryIAb $\delta$ -endotoxin in reversible and irreversible binding to <i>Manduca sexta</i> and <i>Heliothis virescens</i> ," <i>J. Biol. Chem.</i> , 271:2390-2397, 1996.
	C28	Rajamohan <i>et al.</i> , "Single amino acid changes in domain II of <i>Bacillus thuringiensis</i> CryIAb $\delta$ -endotoxin affect irreversible binding to <i>Manduca sexta</i> midgut membrane vesicles," <i>J. Bacteriol.</i> , 177:2276-2282, 1995.
	C29	Rupar <i>et al.</i> , "Two novel strains of <i>Bacillus thuringiensis</i> toxic to Coleopterans," <i>Applied Environ. Microbiol.</i> , 57(11):3337-3344, 1991.
	C30	Slaney <i>et al.</i> , "Mode of action of <i>Bacillus thuringiensis</i> toxin CryIIIA: An analysis of toxicity in <i>Leptinotarsa decemlineata</i> (Say) and <i>Diabrotica undecimpunctata howardi</i> Barber," <i>Insect Biochem. Molec. Biol.</i> , 22:9-18, 1992.
	C31	Slatin <i>et al.</i> , "Delta-endotoxins form cation-selective channels in planar lipid bilayers," <i>Biochem. Biophys. Res. Comm.</i> , 169(2):765-772, 1990.
	C32	Smedley and Ellar, "Mutagenesis of three surface-exposed loops of a <i>Bacillus thuringiensis</i> insecticidal toxin reveals residues important for toxicity, receptor recognition and possibly membrane insertion," <i>Microbiology</i> , 142:1617-1624, 1996.
	C33	Smith <i>et al.</i> , "Mosquitocidal activity of the CryIC $\delta$ -endotoxin from <i>Bacillus thuringiensis</i> subsp. <i>aizawai</i> ," <i>Appl. Environ. Microbiol.</i> , 62(2):680-684, 1996.
	C34	Smith and Ellar, "Mutagenesis of two surface-exposed loops of the <i>Bacillus thuringiensis</i> CryIC $\delta$ -endotoxin affects insecticidal specificity," <i>Biochem. J.</i> , 302:611-616, 1994.
	C35	Von Tersch <i>et al.</i> , "Membrane permeabilizing activity of <i>Bacillus thuringiensis</i> Coleopteran-active toxins CryIIIB2 and CryIIIB2 domain 1 peptides," <i>Appl. Env Microbiol.</i> , 60:3711-3717, 1994.

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	C36	Walters <i>et al.</i> , "Ion channel activity of N-terminal fragments from CryIA(c) delta-endotoxin," <i>Biochem. Biophys. Res. Commun.</i> , 196(2):921-926, 1993.
	C37	Woltersberger <i>et al.</i> , "Site-directed mutations in the third domain of <i>Bacillus thuringiensis</i> $\delta$ -endotoxin CryIAa affect its ability to increase the permeability of <i>Bombyx mori</i> midgut brush border membrane vesicles," <i>Appl. Environ. Microbiol.</i> , 62(1):279-282, 1996.
	C38	Wu and Dean, "Functional significance of loops in the receptor binding domain of <i>Bacillus thuringiensis</i> CryIIIA $\delta$ -endotoxin," <i>J. Mol. Biol.</i> , 255:628-640, 1996.
	C39	Wu and Aronson, "Localized mutagenesis defines regions of the <i>Bacillus thuringiensis</i> $\delta$ -endotoxin involved in toxicity and specificity," <i>J. Biol. Chem.</i> , 267:2311-2317, 1992.
	C40	Zhang and Matthews, "Conservations of solvent-binding sites in 10 crystal forms of T4 lysozyme," <i>Prot. Sci.</i> , 3:1031-1039, 1994.
	C41	Dean, D.H. <i>et al.</i> "Probing the mechanism of action of <i>Bacillus thuringiensis</i> insecticidal proteins by site-directed mutagenesis—a minireview," <i>Gene</i> , 179(1):111-117, 1996. ✓
	C42	Lazar, E. <i>et al.</i> "Transforming growth factor: a mutation of aspartic acid 47 and leucine 48 results in different biological activities," <i>Molecular and Cellular Biology</i> , 8:1247-1252, 1988.
	C43	

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